

**REMARKS**

Claims 1-6 are pending in the application. Claims 2 and 4 have been withdrawn from consideration by the Examiner.

As a formal matter, Applicants appreciate the Examiner's indication that the drawings filed on February 27, 2004 are accepted, and appreciate the Examiner's acknowledgement of Applicants' claim for foreign priority and receipt of the certified copies of the foreign priority documents. Applicants also appreciate the Examiner's consideration of the Information Disclosure Statement filed on May 27, 2004.

In Paragraph 2 at page 2 of the Office Action, the abstract of the disclosure is objected to because of inclusion of legal phraseology "comprising".

In response, Applicants replace "comprising" in the Abstract with "further including" in the Amendment in order to overcome the Examiner's objection to the Abstract.

Reconsideration and withdrawal of the objection to the Abstract is respectfully requested.

In Paragraph 2 at pages 2-5 of the Office Action, Claims 1, 3, 5 and 6 are objected to. Claim 1 is objected to because of the phrases "a conductor layer and a resin layer"; "an internal conductor layer"; and "at least one of said resin layer".

Claim 5 is objected to because of the phrase "a core substrate including a through hole provided through an insulating substrate" and the either/or recitations regarding a connection portion, assertedly reading on two different species.

In response, Applicants clarify antecedent basis to certain terms in the claims as viewed in the amendment to Claims 1, 3, 5 and 6.

Accordingly, reconsideration and withdrawal of the objection to Claims 1, 3, 5 and 6 is respectfully requested.

In Paragraph 5 at pages 4-7 of the Office Action, Claims 1, 3 and 5 are rejected under 35 U.S.C. §103(a) as being unpatentable over Peterson et al. (U.S. Patent No. 4,963,697) in view of Kawasaki et al. (U.S. Patent No. 6,930,258).

The Examiner cites Peterson's modified circuit board as disclosing all elements of Applicants' claimed invention, except for the filling material filling the hollow portion of said through hole.

The Examiner cites Kawasaki as disclosing a through hole in the core substrate filled with a filling material to have better strength of the via hole for enhanced reliability of the circuit board.

Applicants respond as follows.

Applicants traverse the combination obviousness rejection on at least the basis that Peterson fails to render obvious the present claims, as amended, to recite that no via conductors are provided above the through hole.

For example, Fig. 1 of Peterson employs vias 106 and 107 at locations several layers above and below the through hole, and therefore does not meet the above requirement of both independent Claims 1 and 5 (as amended). As such, the combination of Peterson with Kawasaki could never achieve the invention.

The significance of providing a transmission line structure where the via conductors 61 and 62 composing the connection portion 6 avoid positions above the through hole 22 (see Fig. 1

of the present specification), is discussed at pages 4-5 of the specification. Namely, as shown in Fig. 3B, thermal expansion of the through hole conductor 22 is smaller than that of the surrounding resin materials 23 and 25. In case the wiring resin substrate is cooled, on the other hand, a reverse phenomenon occurs so that the shrinkage of the filling material 23 is concentrated in the vicinity of the center axis of the through hole 21, as shown in Fig. 3C, to pull down the overlying cover-shaped conductor 4 and resin layer 3. Therefore, via conductors 61 and 62 are easily influenced, if they lie over the through hole 21, by the influences of the push-up or pull-down of the core substrate 2. That is, in accordance within the invention as claimed in Claims 1 and 5, the influence of the aforementioned push-up/pull-down from the core substrate can be prevented by arranging the via conductors constituting the connection portion at positions avoiding the through hole.

Regarding the secondary reference, Kawasaki discloses via conductors that fall into both categories of being formed above through holes as well as not being formed above through holes (see Fig. 6), and thus would not make up for Peterson's deficiencies.

In Paragraph 6 at page 8 of the Office Action, Claim 6 was rejected under 35 U.S.C. §103(a) as being unpatentable over Peterson et al. in view of Kawasaki et al., and further in view of Shimada et al. (U.S. Patent No. 6,353,189).

In response, Applicants rely on the response to the rejection of Claim 1 above for traversing the combination obviousness rejection over Peterson, Kawasaki and further in view of Shimada.

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Appln. No.: 10/787,412

Atty. Docket No. Q80149

Accordingly, Applicants respectfully request reconsideration and withdrawal of the obviousness rejections.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

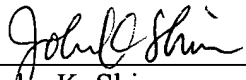
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